

WHAT IS CLAIMED IS:

1. A pressing device for manufacturing of shaped compacts from pulverized or granulated material made from iron, plastics, hard metal, or ceramic material components, the pressing device comprising:

a frame structure being connectable adapter-like via a lower connection device with a lower press frame means of a press;

a die holding plate arranged in said frame structure;

a base body arranged in said frame structure, wherein said die holding plate and said base body being arranged in said frame structure to be displaceable relatively one to the other;

a plurality of punch carriers at least one part of them being displaceably mounted at said frame structure relatively to said die holding plate and relatively to said base body to be displaceable between them in the direction of a central axis running in press direction; and

supporting devices supporting said punch carriers in a final press position relative to said base body, characterized in that said supporting devices are arranged between said base body and said punch carriers such that at least one of said supporting devices is supported by another of said supporting devices in relation to said base body.

2. The pressing device according to claim 1, wherein at least one of said supporting devices is arranged around said central axis and wherein around said axis is left a free space for through leading of punch carriers and punches, which are related to said base body and to said at least one of said supporting devices, respectively, being arranged below said supporting devices.

3. The pressing device according to claim 1, wherein at least one of said supporting devices centrally supports punch carriers and punches seated thereon and wherein said at least one of said supporting devices supports at least one further above arranged punch carrier in said final press position approximately in said line of force.

4. The pressing device according to claim 1, wherein at least one of said supporting devices comprises a supporting device element, which from said side sticks out or

protrudes from said supporting device in direction to said central axis carrying an assigned punch carrier.

5. The pressing device according to claim 1, wherein at least one of said punch carriers is adjustable by a punch carrier height adjusting device in direction to said central axis relative to said supporting device supporting this punch carrier.

6. The pressing device according to claim 5, wherein said punch carrier height adjusting device comprises a relative to said supporting device stationary supporting device adjusting element and a relative to said punch carrier stationary punch carrier element, which in especially cylindrically lie one in the other, and which have threads meshing into each other, effecting height adjustment relative to each other by screwing said punch carrier element and said supporting device adjusting element together one against the other around said central axis.

7. The pressing device according to claim 5, wherein said supporting device, especially in connection with said punch carrier height adjusting device, is dimensioned and arranged as an end stop for said final press position.

8. The pressing device according to claim 1, wherein at least one of said supporting devices, especially a protruding supporting device element, is dimensioned and arranged as stop element and is constructed to constitute a counter stop for a height limiting stop element of at least one of said punch carriers, of said base body, and of a lower arranged supporting device, respectively, in the filling or demolding positions.

9. The pressing device according to claim 8, wherein said height limiting stop element is arranged at said punch carrier being adjustable in height in direction of said central axis relative to said punch carrier.

10. The pressing device according to claim 9, wherein said punch carrier comprises an at least partly cylindrical exterior circumference having an external thread and wherein said height limiting stop element comprises on the inside an at least partly cylindrical interior circumference having an internal thread, said external thread and said internal thread being arranged meshing into each other causing said height adjustment relative to each other by screwing said punch carrier and said height limiting stop element one against the other around said central axis.

11. The pressing device according to claim 5 comprising at least one height adjusting drive, especially a hand crank mechanism or a motor, for adjusting said punch carrier height adjusting device, said height adjusting drive being moved relatively in the same direction as said punch carrier when adjusting takes place.

12. The pressing device according to claim 8 comprising at least one height adjusting drive, especially a hand crank mechanism or a motor, for adjusting the height of said height limiting stop element, said height adjusting drive being relatively moved in the same direction as said height limiting stop element when adjusting takes place.

13. The pressing device according to claim 11, wherein said height adjusting drive drives a first threaded element, in particular a threaded spindle, moving said height adjusting drive relatively to said supporting device and relatively to said punch carrier, respectively and comprising a toothed wheel which is fastened on said threaded element and co-rotating around the longitudinal axis of said threaded element, said toothed wheel or one or more toothed gears, which are put in between, mesh with said toothing on said exterior circumference of said punch carrier height adjusting device or on said exterior circumference of said height limiting stop element, respectively, in a co-rotating way.

14. The pressing device according to claim 11, wherein said height adjusting drive is constructed as being insertable into each other in a modular way by at least one threaded bore drill and/or a reception bore without a thread within it.

15. The pressing device according to claim 1 comprising at least one in particular modular actual position sensor for determining of a relative actual position between at least one of said punch carriers and said base body.

16. The pressing device according to claim 1 comprising a tensioning device for tensioning of said supporting devices supporting each other, in relation to said base body.

17. The pressing device according to claim 1, wherein at least one of said supporting devices comprises a supporting device supporting section for supporting of a higher arranged supporting device or for supporting of a supporting device intermediate means being put in between, said supporting surface of said supporting device supporting section being arranged more deeply than a punch carrier supporting surface.

18. The pressing device according to claim 17, wherein two supporting devices partly reaching one into the other and being arranged one above the other are arranged one in the other in such a way, that between the laterally neighboring surfaces there is a gap via which remaining powder is carried away laterally and at the same time in downwardly direction.

19. The pressing device according to claim 1 further comprising:

at least one synchronization rod for synchronizing an equally directed and equally spaced movement of an upper press block element in relation to at least one of said punch carriers, wherein said synchronization rod leads through leading openings formed in modularly constructed punch carrier plates laterally of above arranged punch carriers; and

a synchronization rod stop element to support said synchronization rod at a selected punch carrier plate within an area around said synchronization rod through leading opening.

20. The pressing device according to claim 1, wherein at least one part of said supporting device, supporting device intermediate pieces, punch carriers, punch carrier plates, punch carrier height adjusting devices or height limiting stop elements are such constructed that they can be modular assembled.